

REMARKS

Reconsideration of the application in view of the above amendments and the following remarks is requested.

In the office action, the Examiner had indicated that the following claims were rejected, on various grounds: claims 1-4, 13-15, and 21-24. The Examiner also indicated that claims 5-12 and 16-20 were allowed.

In the Office Action Summary, claim 12 is shown as being one of the claims which has been allowed. However, on page 2 of the office action, claim 12 was said to have been rejected. The Applicant confirms the Applicant's understanding that the reference to claim 12 on page 2 of the office action was a typographical error, as indicated by the Examiner in a voice-mail message left on November 6, 2006.

With the exception of claim 24, the Applicant has amended the claims in accordance with the Examiner's comments, i.e., claims 1-4, 13-15, and 21-23 have been cancelled.

The Applicant has also amended the following claims to replace "having", "with", and "including" (and variations thereof) with "comprising" or "comprises", as the case may be, in accordance with MPEP §2111.03: Claims 5, 6, 9, 10, 12, 16, 17, 18, 19, and 20. No new matter has been added to such claims.

Revised Claim 24

The Applicant has revised claim 24 by including the subject matter of claims 21 and 22 therein and by making certain additional revisions, as follows:

(i) The Examiner indicated that claim 24 was rejected under 35 U.S.C. §112 on the ground that it omitted essential elements because claim 24 did not include a reference to "three or more actuators".

The subject matter of claims 21 and 22 as filed has been included in revised claim 24, and the wording taken from claim 21 as filed has been amended so that it now refers to "at least three actuators". Support can be found, for instance, at paragraphs 0013 and 0022 in the specification herein. Other amendments have been made to claim 24 to better define the invention. The Applicant submits that the Examiner's rejection under 35 U.S.C. §112 has been addressed by these amendments. No new matter has been added.

(ii) Claim 24 was also rejected under §103(a) on the ground that it was "obvious" in view of U.S. Patent No. 4,803,393 (Takahashi). The Examiner's comments on this point were as follows:

Takahashi . . . teaches the combination of a piezoelectric actuator and a hydraulic amplifier. Takahashi uses the hydraulic amplifier to increase the physical displacement of the piezoelectric stack. As is well known, the amplifier works both ways . . . a small displacement to the large area creates a large displacement at the small area and vice versa. Reversing the amplifier ([mere] rearrangement of parts) would have been obvious to [one] of ordinary skill in the art depending on the result desired. . . .

The Applicant notes that §706.02(j) of the Manual of Patent Examining Procedure includes the following:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure.

The Applicant submits that the Takahashi reference does not meet the three basic criteria. In particular, the Applicant submits that Takahashi does not "teach or suggest all the claim limitations". Takahashi is generally directed to a device which amplifies the displacement provided by activation of a piezoelectric element, using a chamber with a fluid therein. The specific comments in Takahashi relating to the significance of relative sizes of areas acting upon a reservoir of hydraulic fluid are as follows:

The dimensional change of the piezoelectric element is augmented by the pressure chamber 29 to make a greater movement of the plunger. (col. 5, lines 20 - 23)

. . . a rather small expansion of the piezoelectric element 113 can make a rather big pressure change. (col. 6, lines 47 - 49)

In Takahashi, the activation of the piezoelectric element is intended to provide a larger physical displacement. Takahashi neither teaches nor suggests using a hydraulic chamber to provide a reduced physical displacement. In Takahashi,

after the expansion of the piezoelectric element (enhanced by the hydraulic chamber), causes displacement of a plunger in a first direction, the resilience of a portion of the device provides the impetus for retraction of the plunger. For example (in the first embodiment described in Takahashi), after displacement of the plunger (33) downwardly, the plunger is retracted due to the resilience of the bellows (25a):

. . . when the piezoelectric element 13 contracts, the bellows 25a of the envelope 25 expands by the restoring force of itself.

Accordingly, the Applicant submits that Takahashi teaches using the hydraulic chamber only to provide increased displacement. Takahashi neither teaches nor suggests using a hydraulic chamber to provide a reduced or decreased physical displacement.

No additional fees are due.

On the basis of the revised claims set out above and the foregoing remarks, reconsideration of this application and its early allowance are requested.

Respectfully submitted,
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